

different positions in the area is here given, and will probably be of interest. Unfortunately, no special magnetic instruments were on board, and therefore no observations on the dip or force could be made. It is hoped to complete the observations later. The maximum deviation is 11° W.

The remarkable point in this instance is not only the magnitude of the disturbing force, the depth of water and therefore the distance of the compass from the bottom being 100 feet, but that the north point of the needle is repelled from the apparent line of magnetic disturbance, and not attracted towards it as is usually the case in northern latitudes.

W. J. L. WHARTON.

Admiralty, November 15.

THE NEEDS OF KING'S COLLEGE, LONDON.

A PUBLIC meeting was held on Wednesday, November 19, under the presidency of Lord Selborne, to assist the appeal being made to secure the adequate endowment and equipment of King's College, London. Many men prominent in every department of human learning were present, among whom may be mentioned the Bishops of London and Rochester, Lord Glenesk, Sir A. W. Rücker, F.R.S., Sir John Wolfe Barry, F.R.S., Sir Philip Magnus, Sir W. H. Preece, F.R.S., Mr. A. Siemens, Profs. Jeffrey Bell, W. G. Adams, F.R.S., J. M. Thomson, F.R.S., W. D. Halliburton, F.R.S., W. H. Hudson and D. S. Capper.

The following message from the King was read by the Bishop of London :—

"His Majesty is thoroughly in sympathy with the proposal to raise by subscription a large fund for the endowment of King's College as a constituent of the newly-developed University of London, and wishes the movement for that purpose all success."

The Prime Minister also sent a letter in support of the appeal. He remarked, in the course of the letter, that "It would be a serious misfortune to the interests of higher education in the metropolis if, through the burden of debt and the want of proper endowment, King's College was not able to do its part in the great work which I trust lies before the reconstituted University. Higher education cannot be made self-supporting, and is, nevertheless, one of the greatest of our national needs."

Lord Selborne, in explaining the objects of the meeting, referred in high terms of praise to the work accomplished in the past by King's College in training men adequately to undertake a noble part in the civilisation and humanisation of the world. During the course of his remarks, he referred to the value of science in the following words, which we quote from the *Times* report :—

They were met to try to help King's College to go on in the future preaching the gospel of learning and of work, the gospel of research and applied science on which the real strength of the Empire was built. Was it a great thing that King's College, with its history and distinctive features, should appeal to them for that endowment which was absolutely necessary? That effort was only part of a great movement through which they were passing at this moment. There was a fresh wave of enthusiasm for university teaching sweeping over the land. In London, in the provinces, there were movements for the extension of universities, for the founding of universities, for the development of higher education. Why? He thought it was because there was a general belief that in the university teaching of this country men were taught what they wanted to know by men who knew how to teach. They felt that the higher part of education was not lost sight of in these universities, certainly not in King's College.

It was unanimously resolved, on the motion of Sir R. Jebb,

"That, in view of the distinguished services which have been rendered by King's College to higher education and research in

London, it is of the highest importance that the work of the College, in its new connection with the University of London, should receive support adequate for its effective continuance and progress."

In seconding the resolution, Sir J. W. Barry said :—

It was necessary to bring before all interested in the wellbeing of the University of London the absolute necessity of the cultivation of science and the promotion of research. They knew the story of the exultant professor who said he was investigating a subject which could not be of any use to anybody, and that was why he was so much interested in it. But that was probably only a partial view of that professor, as experience showed that researches which appeared to be of no practical use often turned out to be most valuable adjuncts to human knowledge. What was wanted was not merely to educate workmen in a technical way, but to educate masters and directors. There was no longer a possibility of the great manufactures of this country being conducted successfully without scientific knowledge from top to bottom of the whole of the people engaged.

A resolution proposed by the Bishop of London and seconded by Sir Douglas Fox pledged the meeting to use every effort to raise a sum sufficient to secure "the liberation of the College from debt, the maintenance of the efficiency of the College in laboratories and equipment for higher teaching and research, and the adequate endowment of its professorships."

NOTES.

It is with deep regret that we announce the death of Sir William Roberts-Austen, K.C.B., F.R.S., on Saturday last, at the age of fifty-nine.

THE Academy of Natural Sciences of Philadelphia has, on the recommendation of its special committee, consisting of Messrs. Theo. D. Rand, Amos P. Brown, R. A. F. Penrose, jun., and H. F. Osborn, has conferred the gold medal of the Hayden memorial geological award for 1902 on Sir Archibald Geikie, F.R.S.

THE trawling vessel s.s. *Huxley*, which has been chartered and fitted out by the Marine Biological Association for service in connection with the International North Sea Investigations, will be alongside Fish Wharf, Billingsgate (by London Bridge) during the afternoon of Tuesday next, December 2. The president of the Association has issued invitations to an inaugural inspection of the vessel to be held on that day.

A NEW building to accommodate the French Academy of Medicine was opened on Tuesday, M. Loubet and M. Chaumié, Minister of Education, being among the guests present. Dr. A. Riche, president of the Academy, gave an address upon the history of the Academy and the contributions made to medical science by its members. "The Academy is happy," he is reported by the *Times* correspondent to have said, "to take possession of a dwelling worthy of France, which it owes to the liberality of the Government of the Republic, and whereby it obtains the means of better serving the interests of the public health."

THE formation of a British committee to take part in the movement for the erection of a memorial statue of the late Prof. Virchow at Berlin was referred to a fortnight ago (p. 35). The inaugural meeting of the committee was held on Friday last, when Lord Lister, who was in the chair, described the origin of the movement and the ready support that has been given to it. A general committee has been formed containing nearly one hundred names of men distinguished by their work in various branches of natural science and medicine; and a form of appeal

has been decided upon. At Friday's meeting, Lord Lister was appointed chairman of the memorial committee; Lord Avebury hon. treasurer; and Sir Felix Semon hon. secretary. It is to be hoped that the response to the appeal for subscriptions will be prompt and generous, so that Great Britain may take a worthy share in the erection of a monument to a man whose genius was used to benefit the whole world. Contributions should be sent to "the Hon. Treasurer of the Virchow Memorial, care of Messrs. Roberts, Lubbock, and Co., 15 Lombard Street, London, E.C.," who will send an acknowledgment to the individual contributors. When the list has been closed, the hon. treasurer will forward the amount to the treasurer of the Berlin committee, together with a list of the contributors, but the amount of the individual contributions will not be stated. All who appreciate Virchow's services to science and humanity should, therefore, not hesitate to pay their tribute to the memory of one of the greatest men of our time.

THE Liverpool correspondent of the Central News states that the Nobel prize of 3000*l.* for researches in connection with malaria will be a personal one to Major Ross, principal of the Liverpool School of Tropical Medicine. According to the Stockholm correspondent of the *Daily Chronicle*, the prize for medicine will be awarded to Prof. Finsen, the Danish discoverer of the treatment by red light for lupus, and the prize for physics to Prof. S. A. Arrhenius.

THE directors of the Ben Nevis Observatories intimated, in a memorandum dated June, 1902, that the observatories at the top of Ben Nevis and in Fort-William were to be discontinued at the beginning of October, 1902. But, in consequence of a proposal by the Treasury to make an inquiry into the administration of the grant to the Meteorological Council, it was widely felt that an effort should be made to keep the observatories at work until the inquiry had been completed. The directors are now able to state that they have succeeded in obtaining the necessary funds, and that there will be no stoppage of the work at the observatories until October, 1904; that is, the work will go on as hitherto for at least two more years. One generous donor is to provide the whole funds necessary for the second year. This prolongation will give ample time to make such arrangements as may be consequent on the report of the committee of inquiry.

A VIOLENT shock of earthquake is reported to have occurred during the night of November 20 at Oued Marsa, in Algeria.

DR. GILBERT T. MORGAN has succeeded Prof. W. P. Wynne, F.R.S., as editor of the *Journal* of the Chemical Society.

THE inaugural address prepared by Mr. J. Swinburne, president of the Institution of Electrical Engineers, will be delivered at an extra meeting, to be held on Thursday, December 4. Mr. Swinburne's illness prevented the address from being read at the meeting of the Institution on November 13.

OWING, it is supposed, to a defect in the heating apparatus, a fire broke out at midnight of November 18 in the Zoological Gardens at Amsterdam. The outbreak started in the birds' gallery, the centre of which is occupied by rare apes. Fortunately, the loss of life was not great, though Keetje, the popular female orang-utan, was suffocated.

LORD EDMOND FITZMAURICE, M.P., chairman of the Wilts County Council, at the last meeting of the Council made a statement with regard to his negotiations with Sir Edmund Antrobus respecting Stonehenge. Though nothing has yet been definitely decided upon, Lord Edmond expects to be able to place before the Council, in February next, a scheme to arrange satisfactorily for the future of Stonehenge.

PROF. GUIDO CORA informs us that a severe snowfall has occurred in several parts of Piedmont. At Costigliole d'Asti, during the morning of November 19, the snow attained a height of a foot (30 cm.) in the most exposed spots. Another fall of snow took place on November 20-21. During the nights, the temperature has been very severe, and in the morning of November 23, at 8 a.m., the thermometer reached -7° C., an extraordinarily low temperature for such a season. In Alessandria and Ivrea, also on November 19, the fall of snow was 20 cm. and 30 cm. thick.

A CREMATORIUM, established by the London Crematorium Company (Limited), was opened at Golder's Green, Hendon, on November 22, when an address was given by Sir Henry Thompson. The crematorium at Woking is too far from London to be of much use to the metropolis, but it is hoped that the institution now available, being within five miles of the Marble Arch, will do much to supply a real deficiency.

THE *Athenaeum* announces that the Vienna Academy of Sciences is making the necessary preparations for a fifth expedition out of the funds placed at its disposal by the Treitzsche Stiftung. It is to start in January, 1903, under the leadership of Hofrat Franz Steindacher, the director of the Vienna Natural History Museum. Dr. Pentor, of the same institution, will accompany the expedition as entomologist, and Othmar Reiser, the director of the Bosnian Museum at Sarajevo, as ornithologist. The expedition will land at Paranagua, in Brazil, and thence proceed to the study of the fauna of the hitherto unexplored districts of Piahy and Maranhao.

A CORRESPONDENT writes:—"A semi-official announcement in the *Transvaal Leader* of October 23 records the formation of a regularly constituted Department of Agriculture in the Transvaal, with Mr. F. B. Smith, the recently appointed agricultural adviser to Lord Milner, as director. Forestry will be represented on the staff by Mr. Chas. E. Legat, of Edinburgh University, from the Cape Forestry Department; fruit by Mr. Davis, late manager of Mr. Rhodes's fruit farms; and poultry by Mr. Bourlay, from England. A veterinary branch has been created, but the appointment of principal veterinary surgeon has not been filled. The *Agricultural Journal* was taken in hand some little time back, Mr. Burton being editor. The appointment of a forester has not been made a moment too soon, for he must select a suitable place and set about establishing a Government nursery of fruit and forest trees on the lines of the Government nurseries at Tokai, near Cape Town, where special attention is paid to the propagation of the splendid indigenous timber trees of South Africa. It is much better to plant stretches of veldt with wattles and gums than not to plant them at all; but where these grow, yellow-wood, laurel, assegai, Cape ash and white pear will also grow, than which there is no better timber for cabinet and waggon work. Afforestation should go hand in hand with irrigation in conserving the rainfall of the country."

IN the opening address which Sir William Preece delivered at the Society of Arts on November 19 (published in the *Journal* of the Society for November 21), he showed that the commercial conduct of industrial processes arising from the practical application of discoveries follows distinct laws, which may be said to constitute a science of business. Selecting the industries of water, gas, railways and telegraphs, a series of diagrams was given to exhibit graphically the comparative rates of growth of capital, revenue and expenditure. Several directions in which advance is necessary if Great Britain is to compete successfully with other progressive nations were mentioned. In the course of his address, Sir William Preece said:—"The Germans have an admirable Intelligence Department all over the world. If

any electric development is foreshadowed or suggested in any one of our colonies, especially those in which my firm acts as consulting engineer, we at once receive intimation of the fact from Germany and often from America. We never once have received similar information from any British source! I have endeavoured, to the best of my ability, on every occasion to point out that the retardation in commercial progress in the United Kingdom is not due so much to want of scientific education in the men as in the masters. It is the masters who have allowed the Americans and the Germans to oust them out of their own markets, not by any superiority in the quality of their goods, but by lower prices, by superior knowledge of the demands of the markets, by the establishment of new markets, by better direct communication with foreign countries, by superior methods of business ways, by establishing regular intelligence departments, and, above all, by possessing and exercising superior commercial technical knowledge. There is a science in business as in manufacture. We want our business men to be technically educated. Their brains must be trained as the Germans have been trained—to guide their business habits by language, observation, generalisation and common sense. They must lay aside the habits of their fathers. It is very satisfactory to find our new Universities establishing commercial faculties."

We have received from Mr. G. G. Davis, director of the Meteorological Service of the Argentine Republic, vol. xiv. (1901) of the *Anales* (xi + 520 large quarto pages). At the time of the last published organisation report (1897), the system embraced 156 stations of various classes, including a few in Paraguay; six stations are provided with self-recording instruments of the most approved patterns, and the observations are all taken and reduced with much care. At four of the principal observing stations, elaborate discussions of the climate, under each element, are published in the volume in question, and form a very valuable contribution to the meteorology of South America.

We learn from the Report on the administration of the Meteorological Department of the Government of India in 1901-2 that at the end of the year the total number of observatories was 235, of which 186 were maintained by the Government. Seven only were of the first class, furnished with automatic instruments for continuous records of the various meteorological elements. Rainfall was observed at 2389 stations, and seismological observations were satisfactorily recorded by means of Milne's self-registering instrument at three stations; the curves of the latter have been forwarded to the Earthquake Investigation Committee of the British Association. The movements of the upper clouds by means of photogrameters have already been published for Allahabad; similar observations have recently been made at Simla, and the results are ready for publication. The important work of collection of observations from ships' logs has been continued with much activity at Bombay and Calcutta, and the results are utilised in the preparation of pilot charts, giving month by month the normal meteorological conditions over the Indian seas. These seas were remarkably free from severe storms during the year ending March 31, 1902, there being only seven disturbances, of which four were of slight intensity; due warning was given in all cases to the ports concerned.

THE most recent addition to the valuable series of wind charts published and in preparation by the Meteorological Office shows the mean direction and force of winds round those parts of the coasts of South America which lie south of the equator ("Wind Charts for the Coastal Regions of South America," Meteorological Office Official Publications, No. 159). The coastal regions are broken up into areas from two to five degrees "square," and in

each is shown a wind rose, represented by arrows which fly with the winds and show the frequency of the winds by their length, and the force by their thickness. The charts embody the results of 264,639 observations of wind, the numbers ranging from 20,033 for September to 24,072 for January. In addition to the wind roses, mean isobars are given for the same areas. The atlas forms an advance part of the series of charts for the South Atlantic Ocean and the eastern margin of the South Pacific Ocean, in course of preparation under the direction of Commander Campbell Hepworth. Maps of this kind furnish material to the investigator as well as to the navigator which is absolutely inaccessible elsewhere. As illustrating the unique value of such charts, the light thrown on the distribution of cyclonic winter rainfall far up the east coast of South America may be mentioned, a distribution which no charts of mean pressure would account for. We look forward with the more interest to the completed charts of the South Atlantic, inasmuch as they will give a still more extended opportunity of studying the external relations and internal economy of an oceanic area of low mean pressure.

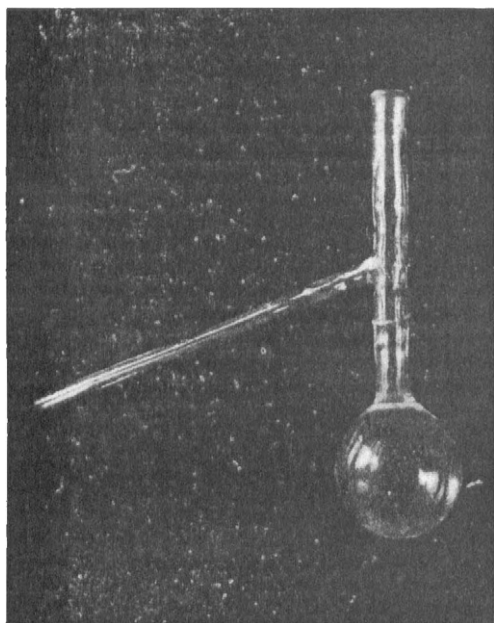
WE have received from Messrs. J. W. Gray and Son a pamphlet on scientific protection against lightning, written by Mr. A. Hands. The writer gives a careful explanation of the principles which must be observed in erecting lightning conductors; as the pamphlet is written in non-technical language, it is to be hoped it may be the means of disseminating information amongst the public, since there are few subjects on which more ignorance and superstition exist. The importance of careful protection may be gathered from the fact that Mr. Hands estimates the damage caused annually by lightning in this country alone at from 50,000*l.* to 100,000*l.*

THE *Engineering Magazine* for November contains an interesting review of wireless telegraphy from the pen of Mr. A. F. Collins. The writer gives a brief historical *résumé* and explains the theoretical basis of the subject, and then proceeds to a detailed examination of the different systems of Hertzian telegraphy which have been developed in the past few years. Those who have attempted to follow the development know that the number of workers has been large and that each has evolved a system having certain distinctive features, and they will welcome an account which describes and illustrates the peculiarities of each. Mr. Collins describes the systems worked out by Mr. Marconi in England, Messrs. Slaby and Arco and Braun in Germany, Messrs. Popoff and Ducretet in France, Messrs. Fessenden and de Forest in America, Senor Severa in Spain, and the repeating system tried by M. Guarini in Belgium.

Die Zeitschrift für das gesamte Brauwesen publishes a highly interesting notice, by Dr. Klöcker, of Prof. Emil Chr. Hansen, written on the occasion of the celebration of the twenty-five years' connection of the eminent investigator with Carlsberg. Hansen's early years shadowed nothing of the career which he ultimately carved out for himself in the scientific world; indeed, a talent for portrait painting led him to migrate from his home at Ribe to Copenhagen with the intention of studying art. Here, however, he worked hard at science, and after passing his examinations at the Polytechnik, he devoted his ability and indomitable energy to botanical studies, and in 1876 he obtained the gold medal of the University for his treatise on Danish manure-moulds. In 1879, he was appointed director of the physiological department of the Carlsberg Laboratory, founded by the enlightened brewer, J. C. Jacobsen. Hansen's work on yeasts has made his name known in every quarter of the globe, and his methods and discoveries have inaugurated a new era in the history of brewing. In the new Fermentation Institute opened about two years ago, of which Hansen is director, neither money nor skill has been spared to supply him

and his able assistants, Drs. Klöcker and Schöning, with very possible facility for carrying on researches which have rendered Carlsberg so famous. The scientific world, indeed, is apt to forget, dazzled by the renown of the laboratory, that a successful brewery exists at Carlsberg which originally called into existence and supplied the wherewithal for the equipment and conduct of Hansen's Institute.

THE firms of Heraeus, of Hanau, and Dr. Siebert and Kühn, of Cassel, have undertaken the commercial manufacture of flasks, &c., from quartz. The quartz is melted in an oxyhydrogen furnace, and worked and blown to the desired shape. At present, the cost of these quartz vessels is somewhat high, but if their use becomes at all general, it is hoped that it will be possible to considerably reduce it. The accompanying photograph, taken from the *Zeitschrift für Elektrochemie* of November 13, shows one of the vessels made by these firms; it will be seen that the art of turning out such finished work as in glass blowing has not yet been attained. We recently pointed out some of the



valuable properties that quartz vessels possess, in a note on a paper by Mr. Hutton on the fusion of quartz in the electric furnace; we do not know whether Mr. Hutton's process has been taken up as yet with a view to its commercial use. It is a matter for regret that this new and possibly very important industry is apparently to be added to those which our manufacturers at home lack either the ability or energy to tackle with success.

FROM the Report of the Medical Officer of Health for the City of London, we gather that a commendable sanitary supervision is being exercised within the City area. A detailed inspection of kitchens of restaurants, &c., was commenced early in the year. With regard to tuberculosis, the Medical Officer says:—"Although probably not the most important, there can be little doubt as to the causal effect of tuberculous meat and milk," and 24 samples of milk were examined by Dr. Klein for the presence of the tubercle bacillus, but with negative results. During 1901, of 392 samples of milk analysed, 21.2 per cent. were found to be adulterated; but of 30 samples of milk taken from the churns on their arrival at the railway stations from the country, all were of excellent quality, showing that it is the City dealer who is the delinquent.

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We have received from the author, Dr. R. von Wettstein, a copy of an essay on neo-Lamarckism and its relation to Darwinism, published in the *Sitzungsberichte* of the German Association of Naturalists and Artists.

The whole of parts iii. and iv. of the *Bulletin* of the Society of Naturalists of Moscow is devoted to an elaborate and profusely illustrated memoir, by Monsieur N. K. Koltzoff, on the development of the skull of the lamprey, *Petromyzon planeri*, in relation to the doctrine of the segmentation of the vertebrate head. It is concluded that the lampreys and their immediate relatives are descended from an ancestral form—the hypothetical Octotrema—furnished with eight pairs of gill-slits. This, in turn, was derived from an earlier form with a still larger number of slits.

To the issue of *La Belgique Coloniale* of November 9, Dr. Forsyth Major contributes some important notes on the okapi skins and skeleton received from the Congo Free State in Belgium, and placed at his disposal for description. The specimens appear to demonstrate that there are two forms of okapi, distinguishable from one another by size, colour, the striping on the legs and the proportions of the skull. For the one represented by the Belgian examples, the author suggests the name *Ocapia lebrechtsi*, in honour of the Secretary of the Interior for Belgium. This form is now definitely known to be horned in the male and hornless in the female; but the author does not at present consider himself justified in stating that the same condition obtains in the form represented by the mounted hornless skin in the Natural History Museum.

IN a paper published in the *Bulletin* of the American Museum (vol. xvi. art. 25), Dr. J. E. Duerden emphasises the importance of boring algæ in the disintegration of corals. "Nearly every fragment of dead coral in the West Indies is marked by a number of green specks, indicating the tunnels of an alga, and these in time lead to the breaking up of the whole mass." The author is inclined to believe that boring algæ have more to do with the formation of lagoons in coral islands than has the solution of the coral-substance by the carbonic acid contained in the water. "It is just in such quiet spots as lagoons that the various boring algæ would be expected to grow most favourably, and by their incessant ramifications lead to the ultimate disintegration of any block of coral, following it even when reduced to fragments." Nevertheless, it is not to be assumed that this is by any means the sole agency in lagoon-formation.

THE whole of parts i. to iii. of vol. xxvi. of *Notes* from the Leyden Museum is occupied by an important paper on the fresh-water fishes of Borneo, by Prof. L. Vaillant, of the Paris Museum. It appears that the expedition recently dispatched to Borneo by the Society for the Encouragement of the Scientific Exploration of the Dutch Colonies succeeded in ascending a river on one side of the island and descending by another on the opposite side, thus effecting a complete traverse. In spite of many difficulties, a large collection of fresh-water fishes was made, which includes a number of new species. The importance of the collection lies, however, in the proof afforded, that the fresh-water fish-fauna of Borneo differs essentially from that of Celebes—notably in the presence of carps (Cyprinidæ) and cat-fishes (Siluridæ), which are totally wanting in the latter island. It is incidentally mentioned that the fresh-water fishes of Palawan and Balabac are intermediate between those of Borneo and the Philippines, with a preponderance of Bornean types.

THE publications in a European language of the Earthquake Investigation Committee of Japan have now reached their eleventh number. This last issue, which is by Dr. F. Ōmori,

treats of the macro-seismic measurements made in Tokio between September, 1887, and July, 1889. These measurements, which are given in tabular forms, refer to the periods, amplitudes, directions and durations of different earthquakes. One map shows the origins of the earthquakes which were felt in Tokio, many of which are within a radius of 30 miles from that city, whilst all, with the exception of two or three, originated at a distance of not more than 75 miles. A second map shows the distribution of origins of earthquakes which were not felt in Tokio. The distance of these from that town approximately vary between 10 and 130 miles. These various origins may be divided into zones. One of them, which is suboceanic, runs parallel with the eastern coast line. The remainder are inland, and practically run from the backbone of the country at right angles to the Pacific coast.

AMONG the recently published memoirs of the Geological Survey are two relating to the coal-fields of North Staffordshire and South Wales. Both are explanatory of the new series Geological Survey maps. "The Geology of the Country around Stoke-upon-Trent," by Mr. Walcot Gibson and Mr. C. B. Wedd, is accompanied by two editions of the map, sheet 123, one with and one without the drift deposits, and both are colour-printed. This is a distinct improvement on the old hand-coloured maps, and the execution by the Ordnance Survey leaves nothing to be desired. The price also (1s. 6d.) is very moderate. The memoir contains a concise account of the Pottery Coal-field, and it will be noticed that the higher portions of the Coal-measures, previously regarded as Permian, are now subdivided and represented on the maps. The recognition of their true position has a very important bearing on further explorations for coal in the northern-midland area. The Triassic and superficial deposits are described, and there is a chapter on economic and applied geology. "The Geology of the South Wales Coal-field, part iii., the Country around Cardiff," is by Mr. A. Strahan and Mr. T. C. Cantrill. It is likewise an explanation of the geological map, sheet 263, which at present has been issued only in the hand-coloured form. The area described is just outside the limits of the great coal-field, but it includes the bordering rocks of Lower Carboniferous and Old Red Sandstone, and a little area of Silurian rocks by the Rhymney River. It also takes in a small portion of Somerset, near Weston-super-Mare. Resting irregularly on the older formations are the Keuper conglomerates and marls, the Rhætic beds and the Lower Lias. A particular description is given of the Rhætic beds, as they first received recognition by the Geological Survey in the conspicuous headland of Penarth. The Glacial and post-Glacial deposits, the water-supply and economic products receive due attention, and there is a full bibliography of geological books and papers relating to the South Wales Coal-field.

THE Irish gold ornaments which a few years ago were acquired by the British Museum have been the source of much departmental correspondence and opposed opinions, the excitement being due to the fact that these valuable and interesting specimens are lodged in the British Museum rather than in the Irish National Museum in Dublin. One argument for their retention in London was that, although they were found in Irish soil, there was no proof that they were of Irish manufacture. In the current number of the *Journal of the Royal Society of Antiquaries of Ireland* (part iii. vol. xxxii. p. 211), there is a paper by Mr. R. Cochrane which conclusively proves that these are genuine Irish objects, and Mr. Cochrane concludes that these *ex voto* objects, especially the golden boat, were connected with St. Columba's voyage to Drumceat, in A.D. 575 or 596, when he was accompanied by the Scottish King Aedan, and their deliverance from the dangers of shipwreck may have furnished the *motif*. There is a note substantially to the same effect, by

the Rev. J. M'Keefry, in the same *Journal* (p. 266). Mr. Cochrane's paper is illustrated by a map and several illustrations borrowed from Mr. Arthur J. Evans's paper "On a Votive Deposit of Gold Objects found on the North-west Coast of Ireland" (*Archæologia*, vol. lv. p. 391).

THE first part (pp. 424, figs. 412) of a new "Lehrbuch der vergleichenden Anatomie," by Prof. B. Haller, of the University of Heidelberg, has just been published by the house of Gustav Fischer, Jena. The work will be reviewed when it has been completed.

THE September issue of *Himmel und Erde* contains a very readable article, from the pen of Dr. H. Wagner, on natural colouring matters. Many interesting facts concerning the early history of these colouring matters are detailed, and the successful attempts at the replacement of several of these by synthetic products are described. In another article, by Herr Kürchhoff, an account is given of the trials which have been made with turbines as motive power on ships.

A FOURTH edition, revised and enlarged, of Prof. R. C. Carpenter's book on "Heating and Ventilating Buildings" has recently been published. In the review of the first edition of the work, in our issue for February 27, 1896, the author was congratulated on producing a really good book on a subject seldom treated scientifically. It is gratifying to find that the book has met with the success it deserves. In its revised form, it should continue to be used largely by heating engineers and architects. The book is published in this country by Messrs. Chapman and Hall, Ltd.

THE little book edited by Prof. Perry, F.R.S., containing an account of the discussion on the teaching of mathematics which took place at the Glasgow meeting of the British Association in 1901, has reached a second edition. The book is enlarged by the addition of the Report of the British Association Committee upon the Teaching of Elementary Mathematics (drawn up by the chairman, Prof. Forsyth, F.R.S.) which was presented at the Belfast meeting this year, and of the letter addressed to this committee by twenty-two mathematical masters in public schools. The book is published by Messrs. Macmillan and Co., Ltd., at 2s. net.

THE first part of a new volume (the third) of the "International Catalogue of Scientific Literature" has been published. The subject is "Physiology, Including Pharmacology and Experimental Pathology," and the second part of the volume referring to it will be issued shortly. The publication of the physiology volume in two parts has been considered advisable, instead of waiting until all the material for the year 1901 has been collected, but in future years, when the organisation of the work has been fully developed, the volume on physiology will be issued as one publication each year. The general scheme of the "International Catalogue" may be judged from the notices of the two volumes on botany and chemistry in *NATURE* of July 3 and September 4 (vol. lxi. pp. 217 and 436). The first annual issue will consist of thirteen complete volumes and four volumes made up of two parts each. Three instalments have now been published, and of the remainder of the issue four are announced as in the press and fourteen in preparation. The price of the complete issue is 18s.

THE products of the decomposition of normal cupric acetate under the influence of heat have been frequently investigated, but no perfectly definite results have been obtained. Messrs. Harcourt and Angel, as the result of a very careful research, have found that the decomposition products are acetic acid, water, cuprous acetate, carbon dioxide, carbon monoxide and a residue containing copper, carbon and small quantities of oxygen and hydrogen. A trace of acetone is also obtained as a result of the decomposition.

SOME interesting facts concerning the velocity of crystallisation have been found as the result of an investigation by Dr. von Pickardt, published in the current number of the *Zeitschrift für physikalische Chemie*. The velocity of crystallisation of super-cooled benzophenone is diminished to the same extent when equimolecular quantities of the most various substances are dissolved in it. The diminution of the velocity for any one dissolved body is, moreover, not proportional to its concentration, but to the square root of this. The regularities which have been observed may be utilised in a practical way for the determination of the molecular weights of substances dissolved in the crystallising medium.

A NEW fortnightly journal—the *Biochemisches Centralblatt*—is to make its appearance very shortly. The editor is Dr. Carl Oppenheimer, and the directors of the undertaking are all men well known for their contributions to biochemistry. It is not intended that the new journal shall serve as a medium for the publication of original papers; its chief object will be to give an abstract of all papers dealing with biochemical subjects published in other journals. The only original contributions which will find a place in the *Centralblatt* will be reviews of the condition and progress of small specialised branches of the subject, and it is proposed that each fortnightly issue shall contain such a *résumé*. The first number will appear early in December. The publishers are Gebrüder Borntraeger, Dessauer Strasse 29, Berlin S.W., and the yearly subscription is 30 marks.

THE examination of the electrical conductivity of a large number of substances dissolved in liquid hydrocyanic acid by Messrs. Kahlenberg and Schlundt (*Journal of Physical Chemistry*, October, 1902) has shown that while some salts are not such good conductors as their corresponding aqueous solutions, others conduct much better. Solutions of acids in liquid hydrocyanic acid are generally much poorer conductors than aqueous solutions, and the authors conclude that electrolytic conducting power is essentially determined by the specific nature of the compound formed when solute and solvent act on each other to form the solution. Certain chemical changes which have been investigated in hydrocyanic acid solution present remarkable peculiarities. It is found, for instance, that whereas trichloroacetic acid readily attacks metallic magnesium and sodium carbonate, it has no action on zinc or calcium carbonate.

THE question of the influence of moisture on the combination of hydrogen and chlorine has been advanced another stage by the recent experiments of Messrs. Mellor and Russell. Great precautions were taken to ensure the purity of the gases used in the experiments, the hydrogen being prepared by the action of steam on metallic sodium and the product purified by absorption in palladium. Pure chlorine was obtained by the electrolysis of fused silver chloride. After the gases had been left in contact with phosphorus pentoxide for nine months in the dark, it was found that a small spark at once caused a violent explosion, and complete combination took place. The mixture of dry gases could, however, be heated to 450° C. without explosion taking place, whereas a moist mixture in a similar bulb exploded at about 260° C. With the dry mixture it was further found that in sunlight no explosion takes place, but that the combination of the gases is very slow. The experiments show clearly that the presence of moisture has very considerable influence on the union of the two gases.

THE additions to the Zoological Society's Gardens during the past week include a Lesser White-nosed Monkey (*Cercopithecus pataurista*) from West Africa, presented by Mr. W. A. Filbert; a Vervet Monkey (*Cercopithecusalandi*) from South Africa,

presented by Mr. C. A. Rawlins; a Lanner Falcon (*Falco lanarius*) from Egypt, presented by Dixon Bey; a Globose Curassow (*Crax globicera*) from Central America, presented by the Hon. Mrs. Lawly; a Stone Curlew (*Œdicnemus scolopax*) European, presented by Mr. A. W. Arrowsmith; eight Dwarf Chameleons (*Chamaeleon pumilus*) from South Africa, presented by Miss Kay; a Horned Lizard (*Phrynosoma cornutum*) from Mexico, presented by Mr. C. W. Farquharson; seven Viperine Snakes (*Tropidonotus viperinus*) European, presented by the Rev. F. W. Haines; two Smooth-headed Capuchins (*Cebus monachus*) from South-East Brazil, a Macaque Monkey (*Macacus cynomolgus*) from India, six Mountain Witch Ground Doves (*Geotrygon cristata*) from Jamaica, two Changeable Lorikeets (*Ptilosclera versicolor*) from North-West Australia, a Suricate (*Suricata tetradactyla*) from South Africa, deposited; an English Wild Cow (*Bos taurus*) born in the Gardens.

OUR ASTRONOMICAL COLUMN.

ASTRONOMICAL OCCURRENCES IN DECEMBER:—

- Dec. 1. 6h. 37m. to 10h. 19m. Transit of Jupiter's Sat. III. (Ganymede).
 1. 5h. 15m. Minimum of Algol (β Persei).
 4. 7h. 38m. to 8h. 33m. Moon occults β Capricorni (mag. 3.4).
 5. 7h. Moon in conjunction with Jupiter. Jupiter, 5° 52' S.
 10. 7h. 8m. to 8h. 22m. Moon occults ζ^1 Piscium (mag. 4.2).
 10. 20h. Venus in conjunction with Uranus. Venus, 0° 8' S.
 11-12. Epoch of Geminid meteoric shower.
 13. 13h. 53m. to 14h. 56m. Moon occults δ^1 Tauri (mag. 4.0).
 13. 14h. 27m. to 15h. 23m. Moon occults δ^2 Tauri (mag. 4.7).
 14. 16h. 52m. to 17h. 0m. Moon occults $\iota 20$ Tauri (mag. 5.3).
 15. Venus. Illuminated portion of disc = 0.998, of Mars = 0.904.
 15. 18h. 24m. to 18h. 42m. Moon occults 26 Geminorum (mag. 5.1).
 16. 3h. 34m. to 8h. 29m. Transit of Jupiter's Sat. IV. (Callisto).
 16. 5h. 49m. to 6h. 32m. Moon occults λ Geminorum (mag. 3.6).
 16. 12h. 27m. to 13h. 20m. Moon occults 68 Geminorum (mag. 5.0).
 17. 18h. 37m. to 19h. 36m. Moon occults A² Cancri (mag. 5.8).
 18. 10h. 9m. Minimum of Algol (β Persei).
 21. 6h. 58m. Minimum of Algol (β Persei).
 21. 15h. 0m. Moon in conjunction with Mars. Mars, 4° 22' N.
 22. 7h. 0m. Sun enters Capricornus. Winter commences.
 30. 0h. 6m. to 3h. 49m. Transit of Jupiter's Sat. III. (Ganymede).
 31. 5h. 0m. Moon in conjunction with Saturn. Saturn, 5° 20' S.

EARLY OBSERVATIONS OF NOVA PERSEI.—In *Circular* No. 66 of the Harvard College Observatory, Prof. Pickering details the results which have been obtained from the measurement of the photographs of the region of Nova Persei which were obtained during the years 1890, 1893 and 1894.

These measurements indicate that the star on the Harvard photographs, which was pointed out by Father Zwack, of the Georgetown College Observatory, and also announced by M. S. Blakjo (*Astronomische Nachrichten*, 157, 193), is a variable which for several years has oscillated between the thirteenth and fourteenth magnitudes, and they also lead to the conclusion that it was, for that period, within one or two seconds of arc of the Nova's position, the difference in position being less than the probable errors of measurement.